802.11 b/g Wireless IP Camera

Model : IC202/IC202w

User Manual

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For firmware version v010612

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1. Introduction

The IC202/w IP Camera is designed with the “user-friendly” idea deep in mind. The user can install the IC202/w easily on his/her home network and then access the IP Camera anywhere in the world through the accompanied video management software - CamView program without setting some complicated DNS name or changing the router’s settings. It’s just a plug & play action.

For indoor surveillance and remote monitoring, the IC202/w provides the best image quality in its class, and excellent performance. The IC202/w IP Camera also provides the best bandwidth efficiency, it offers 640x480 resolution, 30 fps frame rate, real MPEG4 image compression ability. The built-in microphone enables remote users to not only view, but also listen for additional monitoring options.

Of course, with the built-in Web server, the IC202/w IP Cameras can also be managed from a standard web browser on a Windows computer.

The IC202/w IP Camera provides both wireless IEEE 802.11 b/g and wired Ethernet network interfaces for flexible installation. It supports the WEP and WPA (Wi-Fi Protected Access) security modes to provide the best security for wireless networks. (IC202 model only support wired Ethernet interface)

The IC202/w IP Camera provides motion detection function. Users can easily setup this function and receive the notification with the snapshot images through email and/or ftp when some motion events are detected.

The IC202/w IP camera is ideal for securing small businesses, home offices and residences over a local area network and/or the Internet.

The differences

It’s very easy to see the video of the IC202/w IP Camera, you only need to key in the ID/Password of the IP CAM any where in the world, you do not need to remember the IP address or domain name or DDNS name or port number. And you do not need to modify the settings(like port mapping, fixed IP, DDNS, virtual server) of the NAT/router devices, it’s just a plug & play usage.

So, the differences are the followings:

- **Public IP address needed ?** **No**
- **Dynamic DNS needed ?** **No**
- **Port mapping in router?** **No**
- **Virtual server in router ?** **No**
- **UPnP support in router ?** **No**
- **What’s needed ?** **ID and Password**

2. Hardware description and quick installation/usage

The IP CAM is designed to be very easy to install and use. First, let's see the major components of the IP CAM products.

2.1. Major hardware components.

The major components on the **front panel** of the IP CAM products are the built-in microphone, lens and LEDs :

1. Microphone – for receiving the audio/voice. Effective distance is about 5 meters.
2. Lens – the focus of the lens is fixed, you do not need to spend time to adjust the focus, the effective focus range is from 40cm to infinity.
3. Status indication LED (red) – this LED is to indicate the Internet connection status. When the Internet connection is connected, the LED will be constant red light. If there is any Internet connection problem, the LED will be blinking red light.
4. Ethernet indication LED (blue) – this LED is to indicate if the Ethernet link is ok and packet traffic is sending/receiving. When the Ethernet cable is connected, the LED is constant blue light. When there is packet sending/receiving, the LED is blinking blue light.

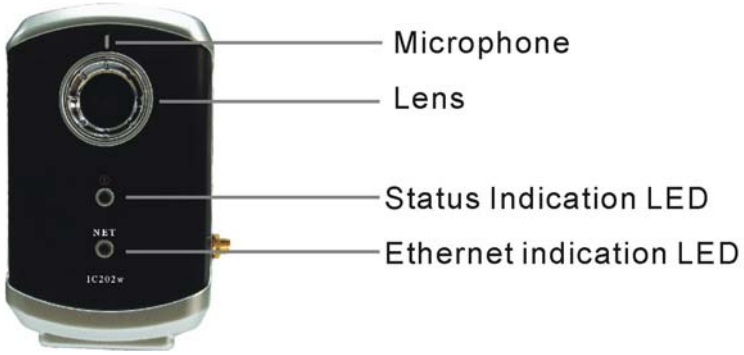

Figure 2-1: Major components in the front panel

The major components on the **back panel** of the IP CAM products are the bracket screw jack, power jack, Ethernet jack and reset button:

1. Bracket screw jack – this is the position to screw in the bracket of the IP CAM. With the bracket, you can put the IP CAM on the desk, on the wall or on the ceiling.
2. Power jack – this is the place to plug in the power adaptor. The power needed for this IP CAM is 5V/1.0A, please make sure you are using the correct power adaptor.
3. Ethernet jack – this is the place to plug in the RJ45 Ethernet cable. When the

Ethernet link is ok, the Ethernet indication LED on the front side will be blue light.

4. Reset button – this is the button to reset the IP CAM to default factory settings. You need to use a small stick like pencil or tooth stick to press the reset button for more than 3 seconds to enable the reset function. Usually when you forgot the administrator account, you will probably need to do this reset action to reset to the default factory settings. Please refer to section 3.15 for more details.
5. Antenna jack(for IC202w) – this is the place to hold the wireless antenna. The antenna must be plugged to let the 802.11 b/g wireless work.

Figure 2-2: Major components in the back panel

2.2. Quick installation and usage

There are only three things that you need to do to see the video from the IP CAM.

1. Connect the IP CAM to the home/office network.
2. Install the CamView software on the notebook/PC.
3. Key in the ID/password of the IP CAM(from the IP/Password card) on the CamView, and then you can see the video.

First, Connect the IP CAM to the home/office network

Please connect the IP CAM accessaries to the IP CAM body correctly, including the antenna, bracket, power adapter and Ethernet cable, as shown in Figure 2-3. And connect the other end of the Ethernet cable to the home network or office network. Usually, this Ethernet cable is plugged into a home NAT/router device or an Ethernet switch if in the office, as shown in Figure 2-4. Since the default settings of the IP CAM use DHCP function and very often there is a DHCP server on most of the Home/office network, the IP CAM should be connected to the Internet immediately. The Internet status LED is constant red light to indicate this good connection status. If the LED is blinking, please refer to section 3.3~3.5 to try other network settings.

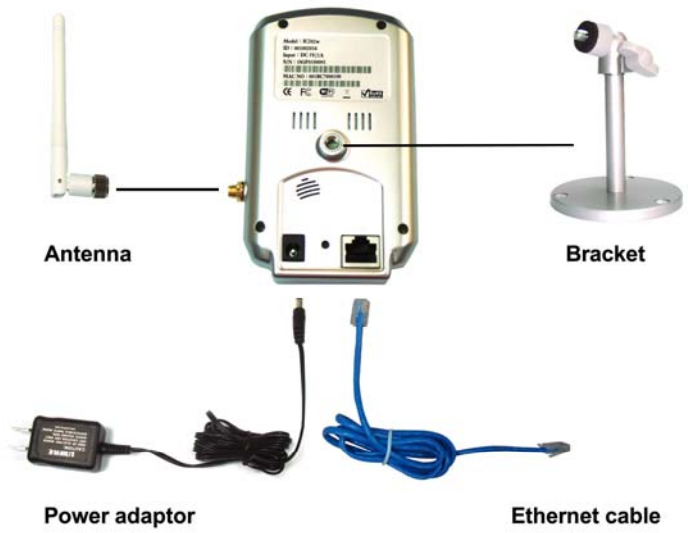

Figure 2-3: IP CAM connection diagram.

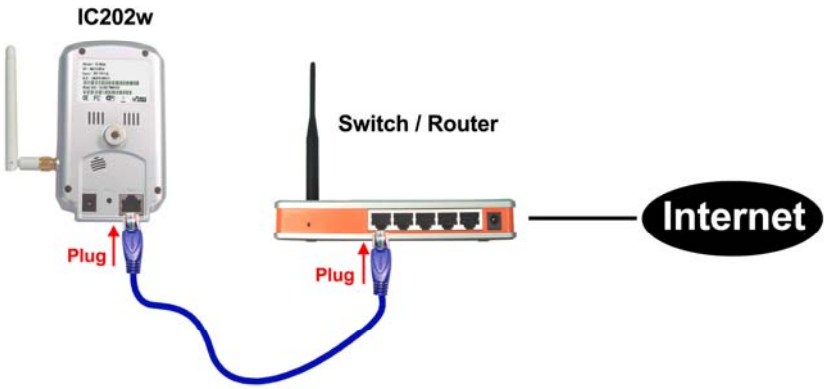

Figure 2-4: Connect Ethernet cable to a switch/router.

Second, Install the CamView software on the notebook/PC

Please insert the installation CD into the CD-ROM drive in your notebook or personal computer (must be running Microsoft Windows OS). Execute the program CamViewInstaller-xxx.exe on the disk. The program will pop-up some windows about the installation options, please press the “next” button to proceed with the installation. After the installation is complete, there will be a CamView icon on the desktop of your computer screen, please execute this icon. The CamView program will run immediately.

Figure 2-5: The installation CD disk

Third, Use CamView program to see the video

Figure 2-5 is the running window of the CamView program. If the computer and IP CAM is connected to the same network, the IP CAM ID will be displayed in the “Auto Search” list. You can double click the “Auto Search” to search all the connected IP CAMs any time. The only thing left right now for seeing the video is to double click the IP CAM ID item in the “Auto Search” list. For example, if the IP CAM ID is 001-001-029, you can then double click the 001001029 item in the “Auto Search” list to view the video. A window asking for password input will pop up. Please key-in the password in your ID/Password card into this field and click “ok”. The video will then be displayed on the window.

Figure 2-6: The ID/Password card

Notice :

1. You can modify this play-video password by entering into the web configuration pages. Please refer to section 3.6 for more information.
2. You can also add the IP CAM into the CameraList or GroupList in the CamView software to have more convenient video display, please refer to the user manual of the CamView software for more functions.

Seeing the video in a remote location

After the IP CAM is installed and you can see the video from the CamView software in the local network, it’s very easy to see the video in a remote location. All you need to do is add a camera item in the “CameraList” folder of the CamView

software, key in the IP CAM ID and Password(from the ID/Password card). And then double click this camera item. You will then see the Camera video immediately. No further NAT/router setting modifications are needed.

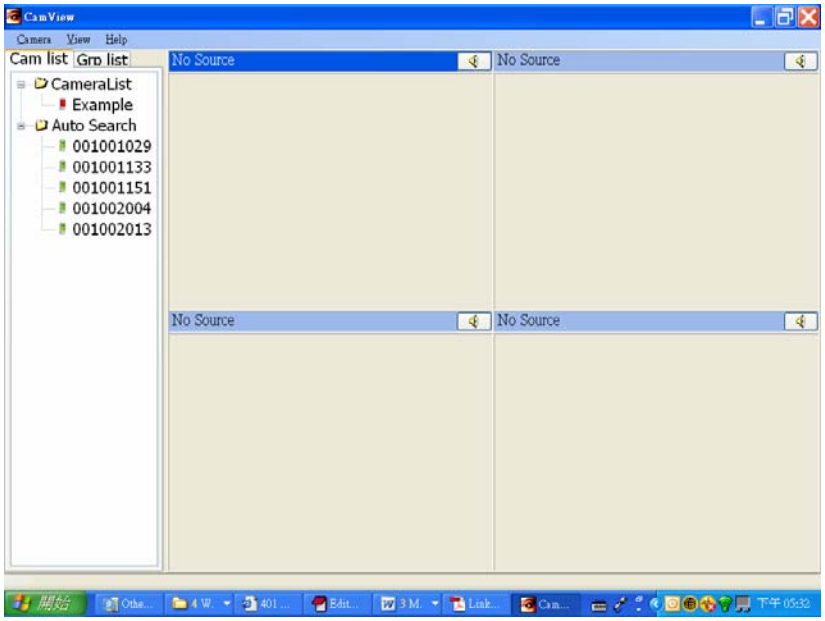

Figure 2-7: Running window of CamView program

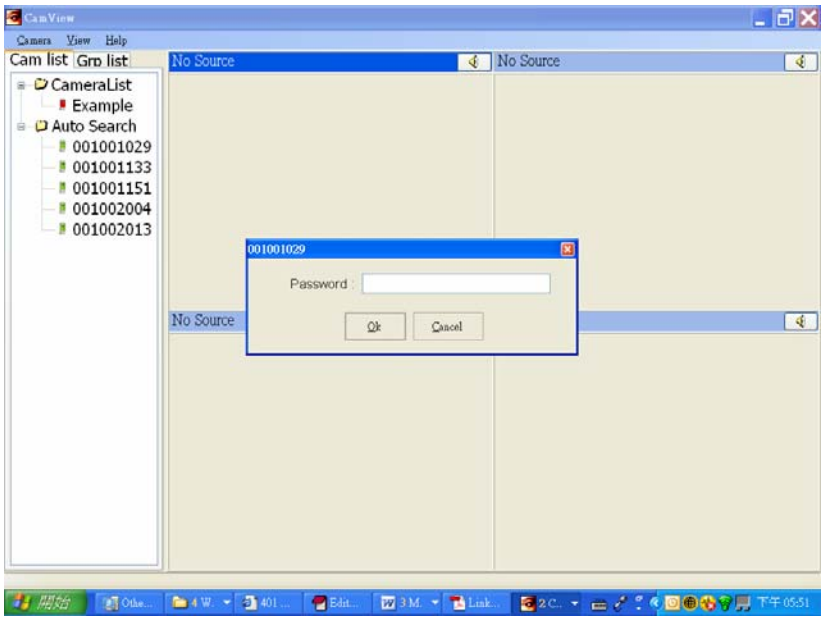

Figure 2-8: Pop-up play-video password window

2.3. Wireless connection (for IC202w)

The IP CAM can also be connected to the home/office network through the 802.11 b/g wireless connection. There are only three things that you need to do to have the wireless connection:

1. Set the WiFi security settings on the web configuration page.
2. Test if the WiFi settings are correct.
3. Unplug the Ethernet cable.

First, set the WiFi security settings on the web configuration page.

Make sure there is a WiFi router or AP on your home or office network. Write down the WiFi security parameters used in this WiFi AP/router, including the SSID , security mode, encryption protocols and the “key” values. The supported WiFi security mode of the IP CAM is WEP(64 bits and 128 bits) and WPA-PSK(TKIP and AES). In most of the home/office WiFi environment, this is quite enough.

The easiest way to set the WiFi settings on the IP CAM is through CamView software. Right-click the searched IP CAM in the “Auto Search” list and click the “Web Configure” to open the login window of the IP CAM. Fill in all the WiFi security parameters you have written down. The WiFi configuration is complete now.

Please refer to section 3.4 for more detailed description if needed

.

Second, test if the WiFi settings are correct

You can now test if the above WiFi settings are correct. Click the “WiFi test” on the “WiFi Security” settings web page. The testing result will be displayed in less than 60 seconds. If the test is failed, please check the WiFi security parameters and test again.

Third, unplug the Ethernet cable

If the WiFi test is successful, you can then enable the WiFi connection by unplugging the Ethernet cable from the IP CAM. The IP CAM will detect the Ethernet cable unplugged condition and start the WiFi connection. After the WiFi is connected, the IP CAM will connect to the Internet immediately.

Notice :

1. Please remember that the WiFi connection will use a different IP address, you will need to do the “Auto Search” function in the CamView again to find the IP CAM again after the WiFi is connected.
2. If you want to switch back to the wired Ethernet connection, just plug in the Ethernet cable into the IP CAM again. Do not need to disable the WiFi function on the web pages.

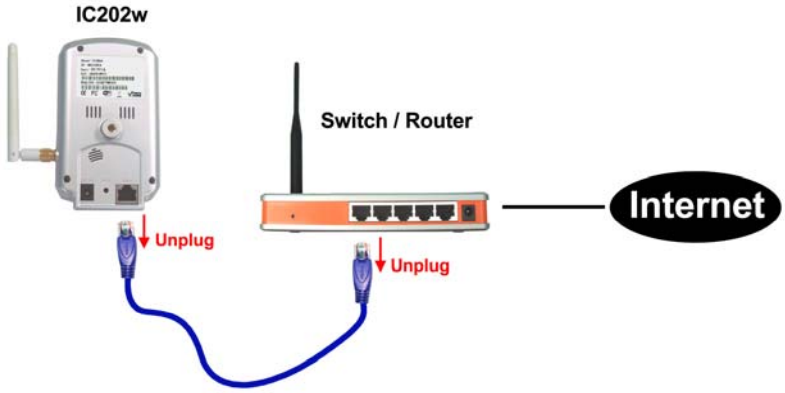

Figure 2-9: Unplug the Ethernet cable to enable the WiFi function

3. Web configurations

You can login into the web configuration page by directly key-in the IP address of the IP CAM or right-click the searched IP CAM in the “Auto Search” list of the CamView software and click the “Web Configure” to open the login window of the IP CAM.

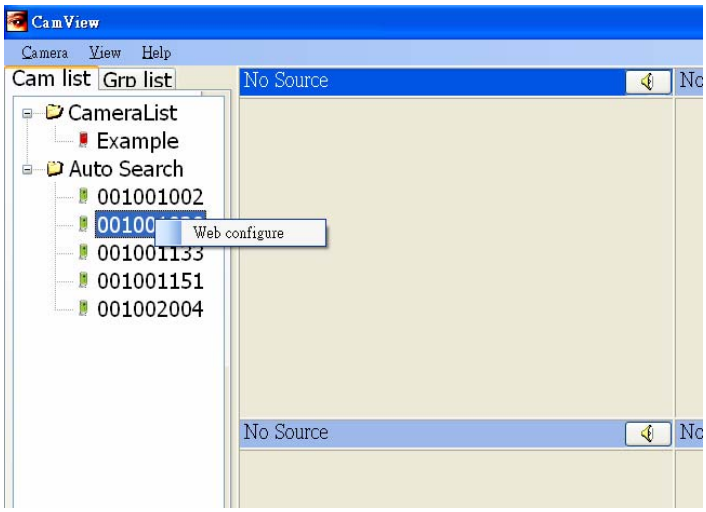

Figure 3-1: Open the web configuration page from CamView software

The default login account is “admin”, leave the Password field empty.

Figure 3-2: IP CAM Web configuration login page

3.1. Information

The first page of the web configuration of the IP CAM IC202(w) is the information page. You can see the model name/firmware version, IP CAM ID, registration status, network type and current video settings(bandwidth, resolution) in this page.

The IP CAM can be viewed remotely by the CamView software only when the IP CAM is registered. If this IP CAM is not registered, please check the Ethernet wiring of your network environment. The “Network type” field displays the network connection(wired or wireless) and method(DHCP, PPPoE or static ip) the IP CAM is running. The “Video users” field displays the number of connected video viewing users.

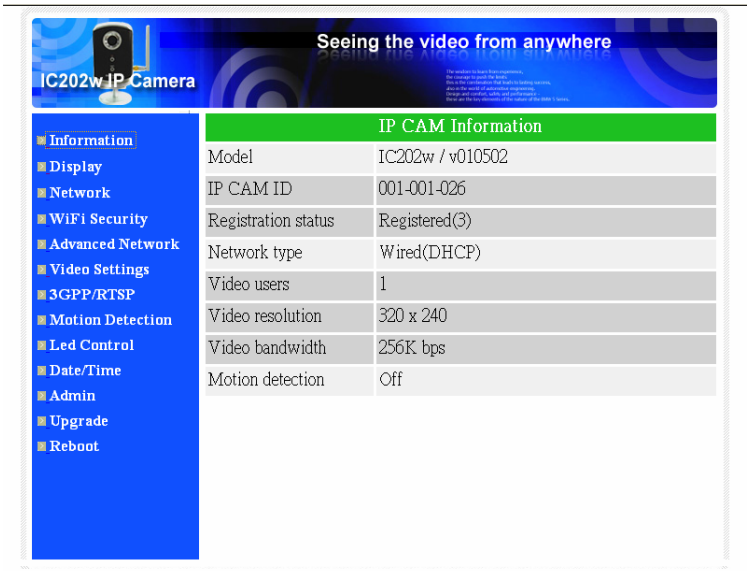

Figure 3-3: IP CAM Information page

3.2. Video Display

This display page allows you to view the video display of the IP camera. For the first time use of this display on a computer, an activeX component will be automatically downloaded into the browser. This could take some time, depends on the internet speed. The component is downloaded from a public domain, so that the computer must be connected to the Internet.

If you want to modify the video display screen size, please refer to section 3.6 for more details.

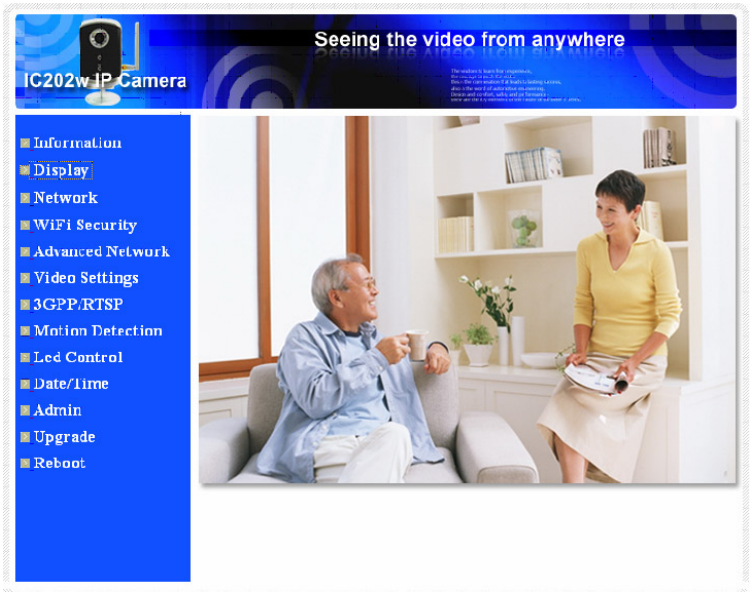

Figure 3-4: Video display page

3.3. Network

The Network page allows you to modify the network settings of the wired Ethernet. The default settings use DHCP to obtain an IP address automatically. In most of the home and office network environment, there is a DHCP server running. In this situation, by using this default settings, the IP CAM can work immediately in most of the time.

If the Ethernet cable is unplugged, the IP CAM will lose connection. But as soon as the Ethernet cable is plugged in again, the IP CAM will obtain a new IP address immediately.

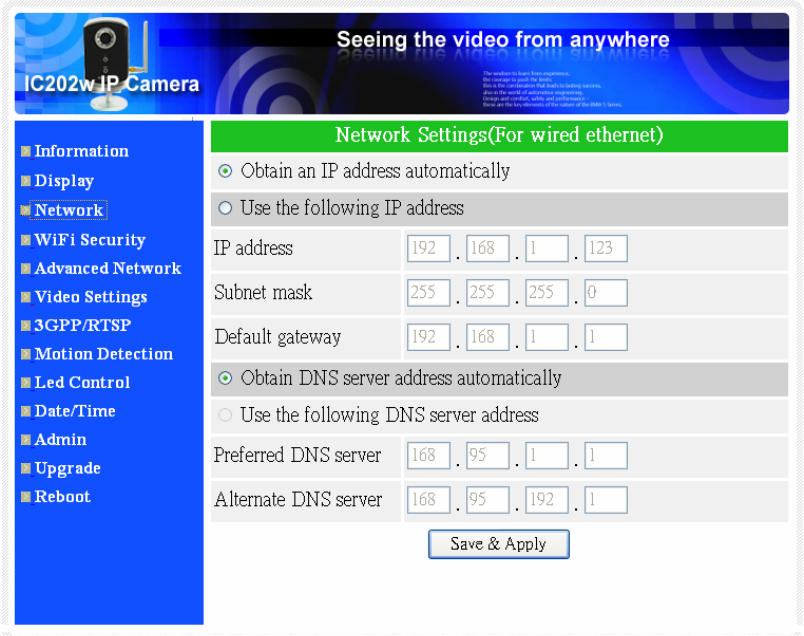

Figure 3-5: Network settings page for DHCP function

If the network environment does not support DHCP function, you will need to set the network settings of the IP CAM manually. Please fill all the fields including “IP address”, “Subnet mask”, “Default gateway” and “DNS server” to let the network work. All these settings must be correct for your network environment, otherwise the IP CAM can not work.

The default setting is “Obtain an IP address automatically”.

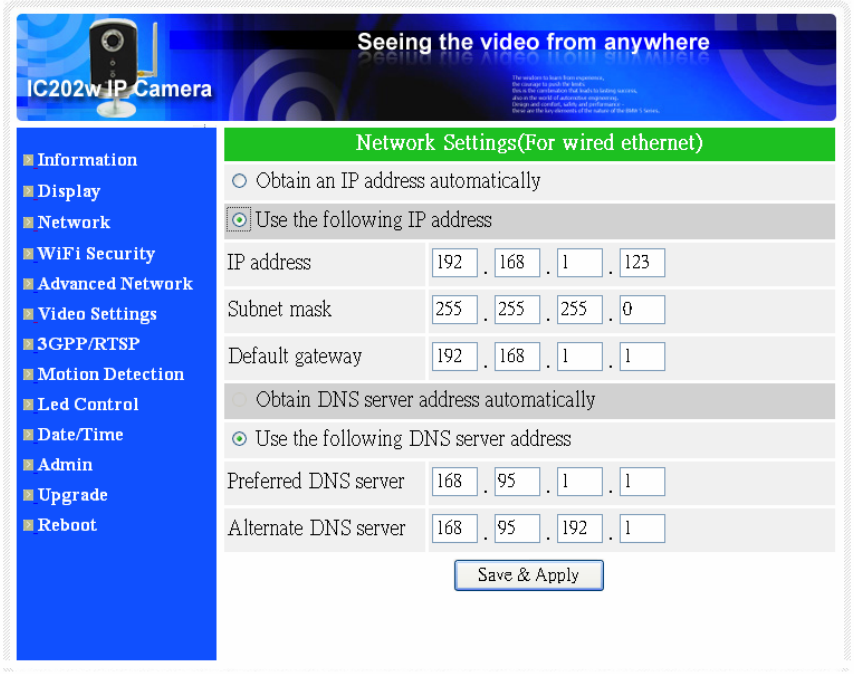

Figure 3-6: Network settings page for fixed IP address

3.4. WiFi security (For IC202w)

You can use the wireless to connect the IP CAM to the network. If your network environment has a 802.11 b/g router or AP running, you can check the “Enable WiFi function” button to use the wireless.

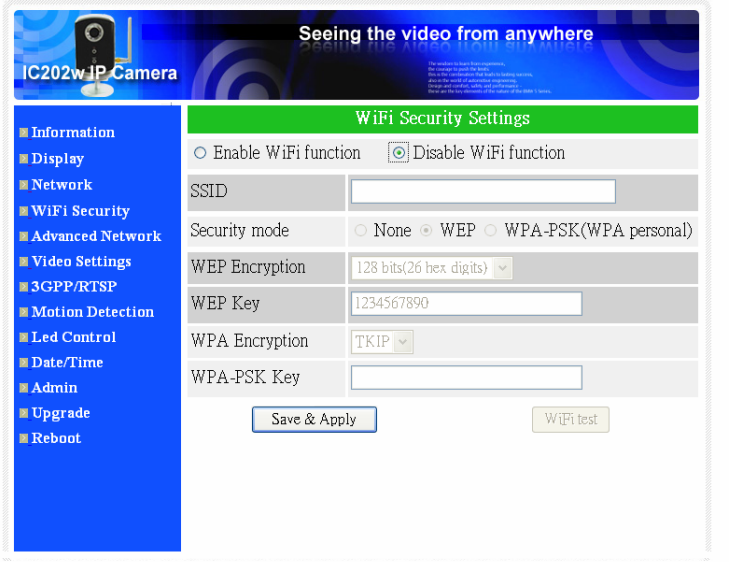

Figure 3-7: WiFi security disabled page

In order to use the wireless network, you need to fill the following fields:

1. SSID – this is the ID of the wireless router or AP of your wireless network environment, must be set correctly.
2. Security mode – this is the security mode used in the wireless router or AP. Need to choose one of the three modes – None, WEP and WPA-PSK.
   WEP : Wireless Encryption Protocol.
   WPA : WiFi Protected Access.
   PSK : Pre-Shared Key.
   TKIP : Temporal Key Integrity Protocol.
   AES : Advanced Encryption Standard.
3. WEP mode – when the WEP mode is chosen, you need also choose between 64-bit(5 char), 64-bit(10 hex), 128-bit(13 char) and 128-bit(26 hex) encryption mode, and then fill the WEP key correctly.
4. WPA-PSK mode - when the WPA-PSK mode is chosen, you need also choose between TKIP and AES encryption mode, and then fill the WPA-PSK key correctly.

All the fields in this page must be filled correctly with the same settings the wireless router or AP using.

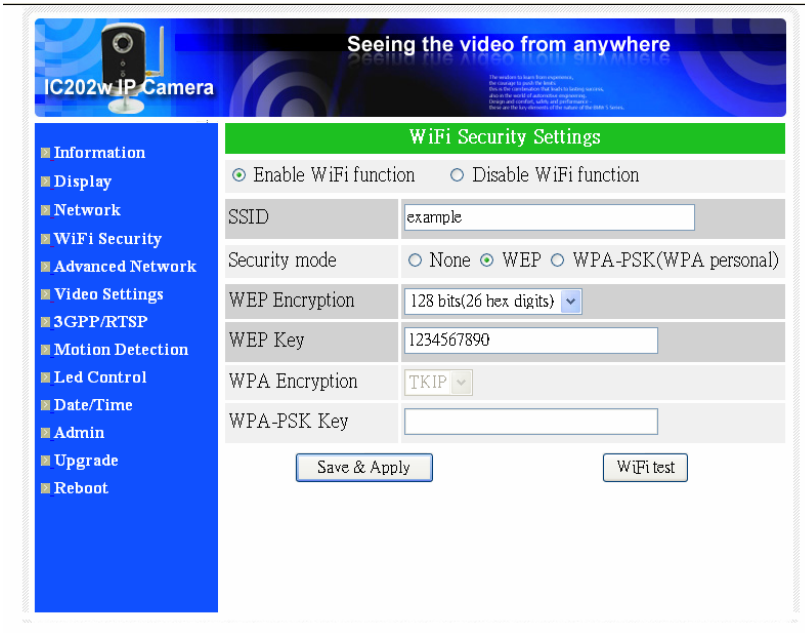

Figure 3-8: WiFi security enabled page

You can also click the “WiFi test” button to check if the IP CAM can connect to the wireless network for these settings. You will need to unplug the Ethernet cable to enable the wireless connection after the “WiFi test” is successful.

After the setting and “Save&Apply”, do not need to restart the IP CAM to let the WiFi work, only need to unplug the Ethernet cable.

The default setting is “Disable WiFi Function”.

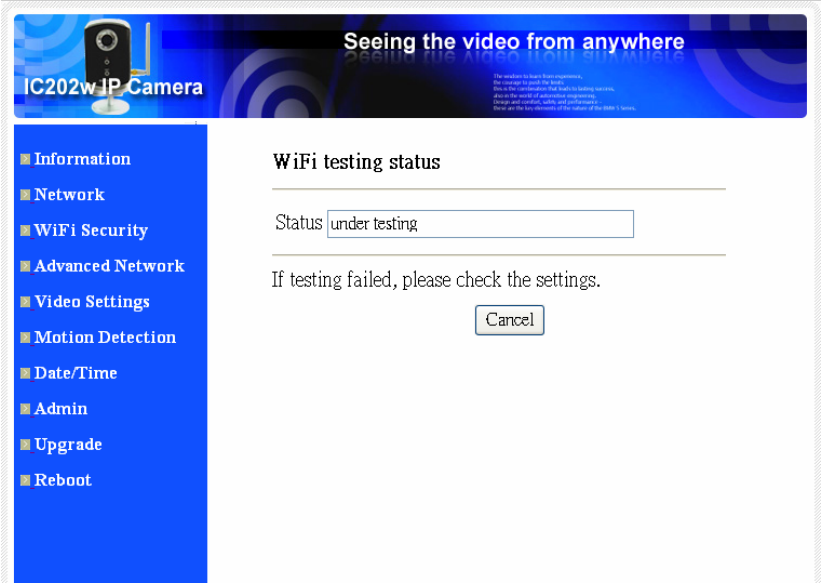

Figure 3-9: WiFi testing page

3.5. Advanced Network

In some special situation, your network environment only provides PPPoE connection(ADSL service), there is no NAT/router available. You will then need to set the PPPoE settings in the “Advanced Network” page. Only the PPPoE username and password are needed to let PPPoE work. After the “Save&Apply” button is pressed, the PPPoE function will work immediately. You can check the “Registration status” in the “Information” page to see if the IP CAM is registered using the PPPoE connection.

Please be noticed that the DHCP or static IP settings in the “Network” page can work together with the PPPoE connection. Only that the PPPoE has higher priority, so, if the PPPoE is working, the IP CAM will use PPPoE to connect to the Internet.

The default setting is “Disable PPPoE”.

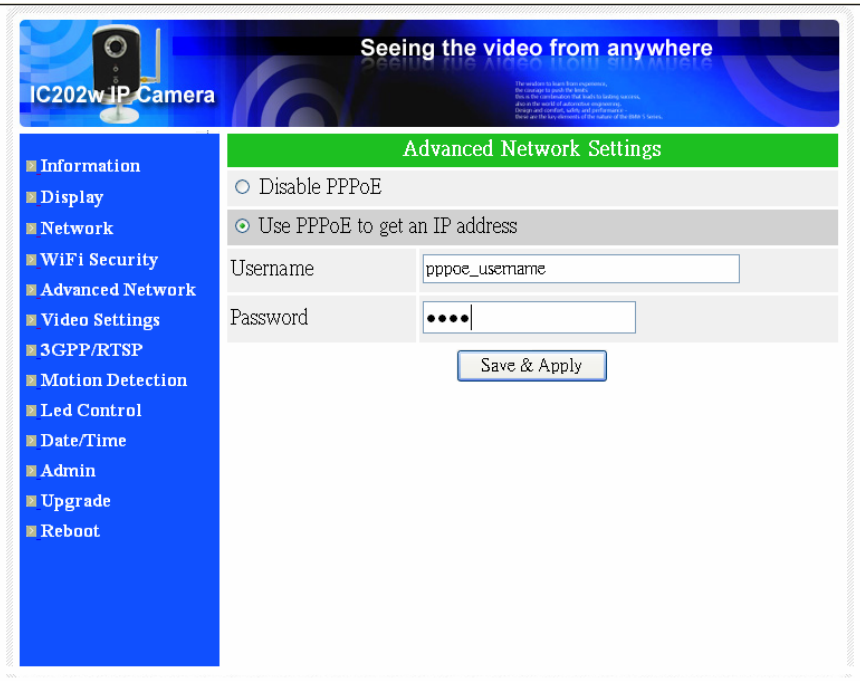

Figure 3-10: Advanced network settings page

3.6. Video Settings

The IP CAM is designed to provide high quality video for viewing from CamView software. In this page, you cam modify some settings related to the video viewing:

1. Password(play video) – this is the password needed for viewing the video from the CamView software. Together with the IP CAM ID, you can view the video of this IP CAM anywhere in the world through the Internet.
2. Internet speed – this is the Internet bandwidth of your network environment. Higher value will generate higher video quality. But if your internet connection can not provide more bandwidth than the specified value, the video quality could degrade. So, please key in a value that is lower than your internet bandwidth.
3. Select resolution & frame rate automatically – you can let the system select the suitable video resolution and frame rate automatically for you. The selection is based on the “Internet speed” value. This is the recommended default setting.
4. Resolution – there are three choices : 160x120, 320x240 and 640x480. If you decide to choose the value manually, you can choose one of the three values. But, please be noticed that if the Internet speed is slow(low value), high resolution(640x480) or frame rate could cause very bad video quality.
5. Frame rate – the video frame display rate. Higher value means faster movement and continuity in the video display.
6. Brightness – the brightness of the video, lower value means darker display.
7. Outdoor/Indoor video – for better video display quality, modify this setting when taking indoor or outdoor video. The default setting is “Outdoor video”, in most cases, this is also ok for indoor usage. Under some special cases, there could be some strip lines on the video display when the IP camera is taking indoor video. In this situation, change the setting to “Indoor video” will solve the problem. Please also be noticed that in “Indoor video” setting, the video display of outdoor view is very vague.
8. Enable/disable audio microphone – you can enable or disable the audio microphone on the IP CAM. If disable, there will be no voice on the CamView video viewing.

When this modification is “Save&Apply”ed, it works immediately, but all the connected video viewing users will be disconnected.

Figure 3-11: Video settings page

3.7. 3GPP/RTSP settings

The IP CAM is able to be viewed from a 3G mobile phone, for detailed settings on the 3G mobile phone, please refer to Appendix E.

Users can disable the 3G mobile access ability in this page. After the 3GPP/RTSP feature is disabled, no 3G mobile phone is allowed to access the video of the IP camera. When this is disabled, the rtsp stream with MPEG2 audio is still working, please refer to Appendix F for more details about rtsp stream with MPEG2 audio.

The “Access URL” line is the url address for 3G mobile phone to input for seeing the video of the IP camera. Different 3G mobile may need to input this url in different way, detailed information could be found in the user manual of different 3G mobiles. Please be noticed that usually public IP address is needed for the IP camera, so that the 3G mobile could access the IP camera’s video.

The default setting is “Enable 3GPP/RTSP”.

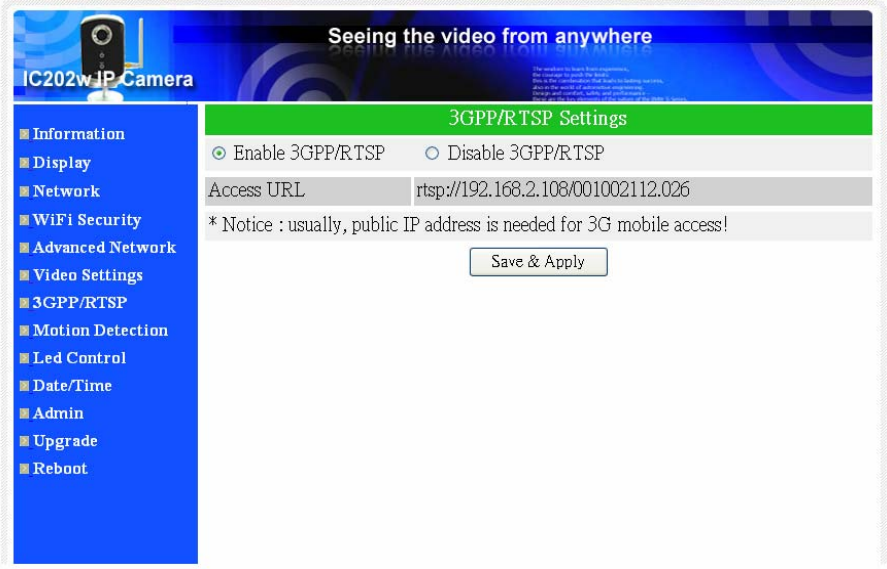

Figure 3-12: 3GPP/RTSP enabled page

3.8. Motion Detection

The IP CAM provides the motion detection function, you can enable the motion detection ability in this page, the IP CAM will then send out an email with a jpeg picture attached in the email and/or send out the jpeg picture file to a ftp server. The related settings are explained below:

1. Detection sensitivity – there are three possible choices in this field.
   "High" means high sensitivity, i.e., the detection is triggered by a very small movement in the video image. If "High" is selected and the size of the moving object is larger than about 1% of the whole video area, it is detected. Please be noticed that the real size of the object could be large or small, anyway, the detection is only based on the relative size of the object. Probably a small pencil moving near the IP CAM could be detected, but a moving car far away from the IP CAM could not be detected.
   "Low" means low sensitivity, i.e., the detection is triggered by a very large movement. If the size of the moving object is larger than about 10% of the whole video area, it is detected. "Median" means 3% to trigger the detection.
2. Send email message – if this item is enabled, the IP CAM will send out an email message with the jpeg picture attached to the specified email account.
3. Email recipient – this is the email address to receive the detection notice message. An email message with the jpeg picture file named by the date/time of the triggered moment will reach this address.
4. SMTP server – this is the SMTP server that will help to transfer the email message. This server is irrelevant to the "Email recipient" address.
5. SMTP username/password – this the account to use the SMTP server to transfer the email message. The SMTP server and username/password account are only for transfer the email message to the "Email recipient", the "Email recipient" could be on another email server or any reachable email address.
6. Send FTP message – if this item is enabled, the IP CAM will send out a jpeg picture file to the specified ftp account.
7. FTP server – this is the FTP server address to receive the jpeg file.
8. FTP username/password – this is the username/password to login into the FTP server, so, this triggered jpeg file will be allowed to reach this FTP server.
9. Remote folder – the jpeg file will be put under this folder of the FTP server.

When this modification is "Save&Apply"ed, it works immediately, but all the connected video viewing users will be disconnected.

The default setting is "Disable Motion Detection".

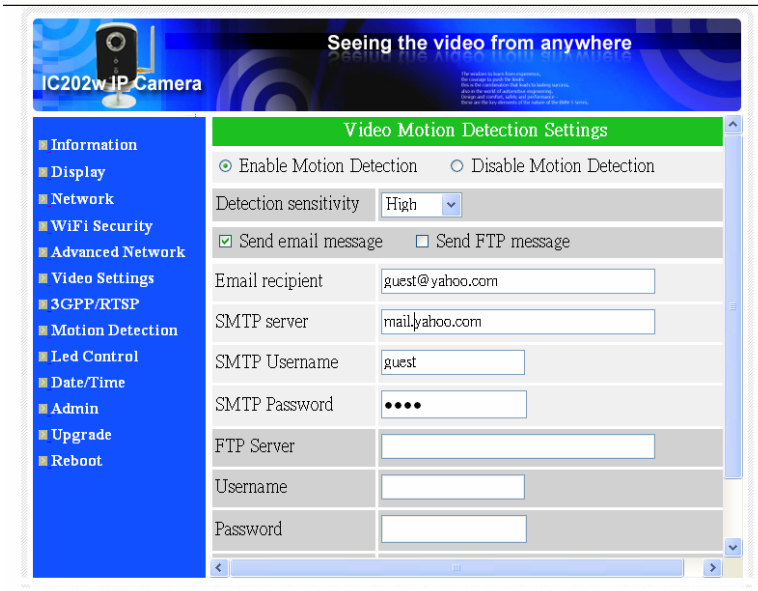

Figure 3-13: Motion detection enabled page

3.9. Led Display Control

The IP CAM provides the Led Display Control function, you can enable or disable the led display/indication on the front panel of the IP cam device. The related settings are explained below:

1. Normal led display – select this to enable the status led and ethernet led display.
2. Turn off led display always – select this to disable the status led and ethernet led display.
3. Turn off led display after network connected – select this then the led will display when the Internet connection has some problem, the led display will be off when the Internet connection is successful.

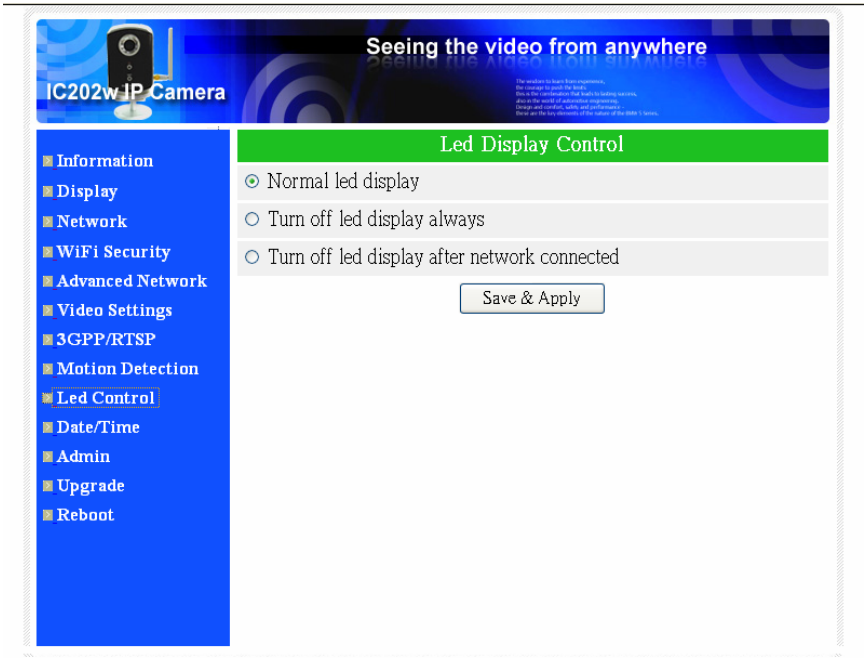

Figure 3-14: Led Control settings page

3.10. Date/Time

The IP CAM can synchronize the date/time with the universally available time server(for example stdtime.gov.tw) through NTP protocol. The date/time will then be corrected with the time server anytime when the Internet is connected.

Users can choose the different TimeZone of their areas to display the correct time.

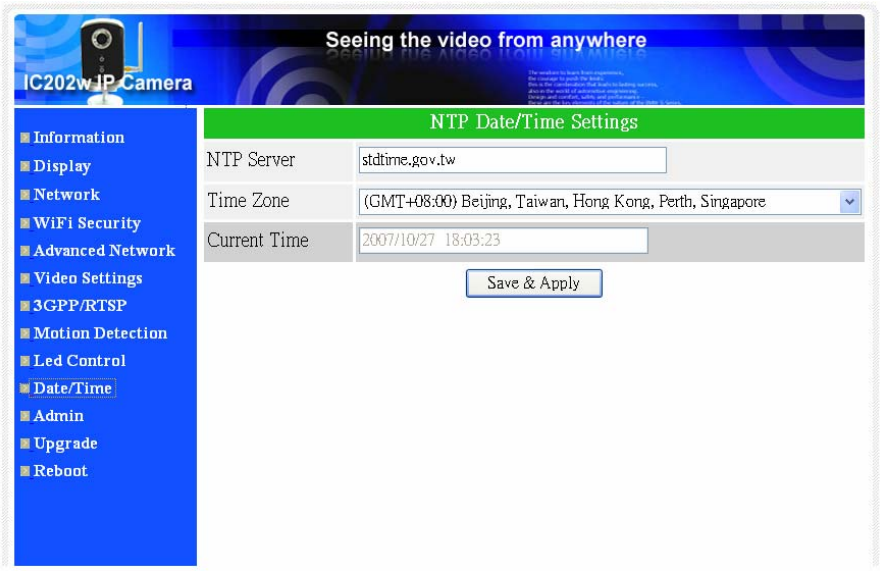

Figure 3-15: System date/time settings page

3.11. Admin

In this page, you can modify the web login account. With this account, you can login to the IP CAM and do any modifications. The default account is “admin” without password. If the login account is forgotten, you can reset the IP CAM to the factory default settings by following the steps in section 3.15 and login with the “admin” account.

Please be noticed that this account is different from the video play password in the “Video settings” page.

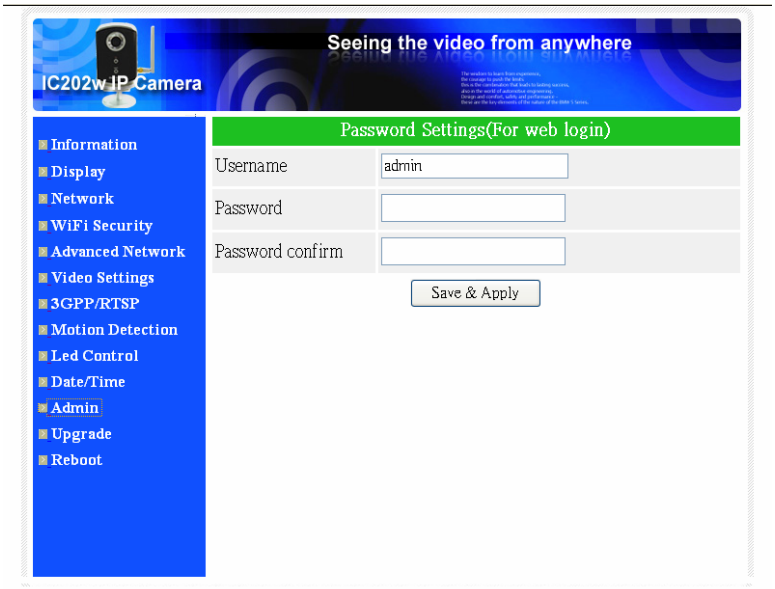

Figure 3-16: Admin settings page

3.12. Upgrade

If there is some new firmware available from the supplier of this IP CAM, you can upgrade the firmware on this page. Please ask for the correct information about FTP server, username/password account and firmware filename from your supplier, and then do this upgrade. A status message about the percentage done in the upgrade procedure is displayed. Please be noticed that during the upgrade procedure, do not power off the IP CAM, otherwise, the IP CAM could probably enter into the safe mode(section 3.14). After the upgrade procedure is finished, the system will restart automatically.

During this upgrade procedure, do not try to modify other settings or view the video.

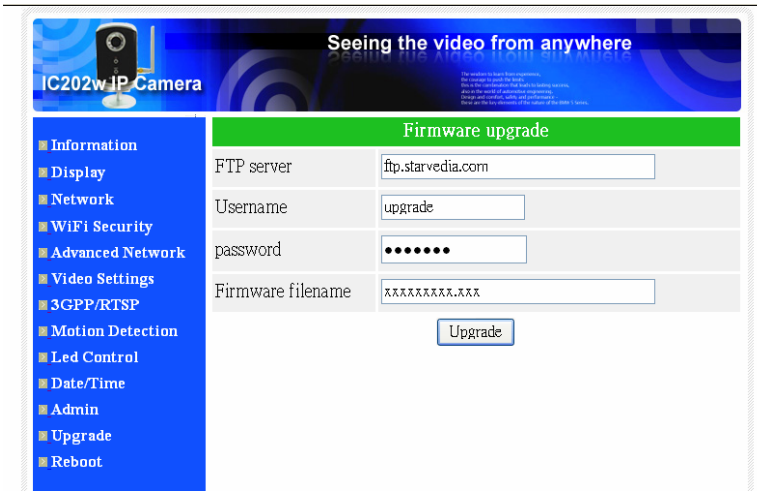

Figure 3-17: Firmware upgrade settings page

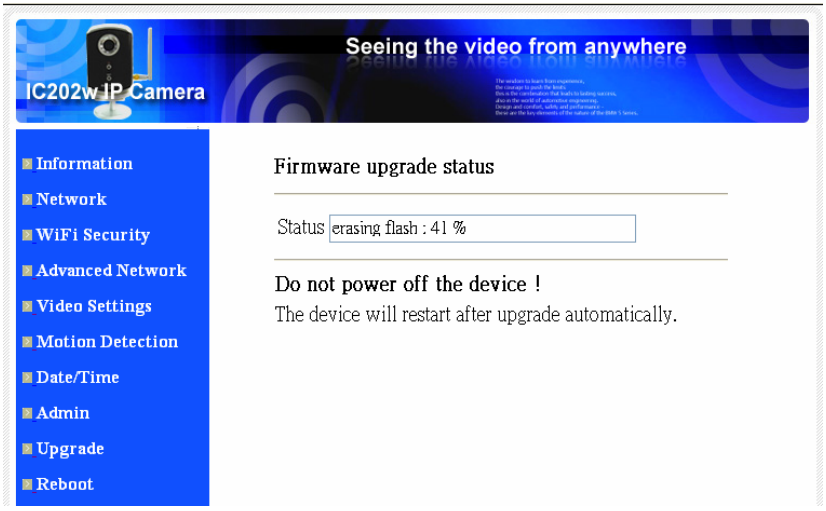

Figure 3-18: Firmware upgrade status page

3.13. Reboot

You can restart the IP CAM manually on this page. All the connected video viewing users will be disconnected.

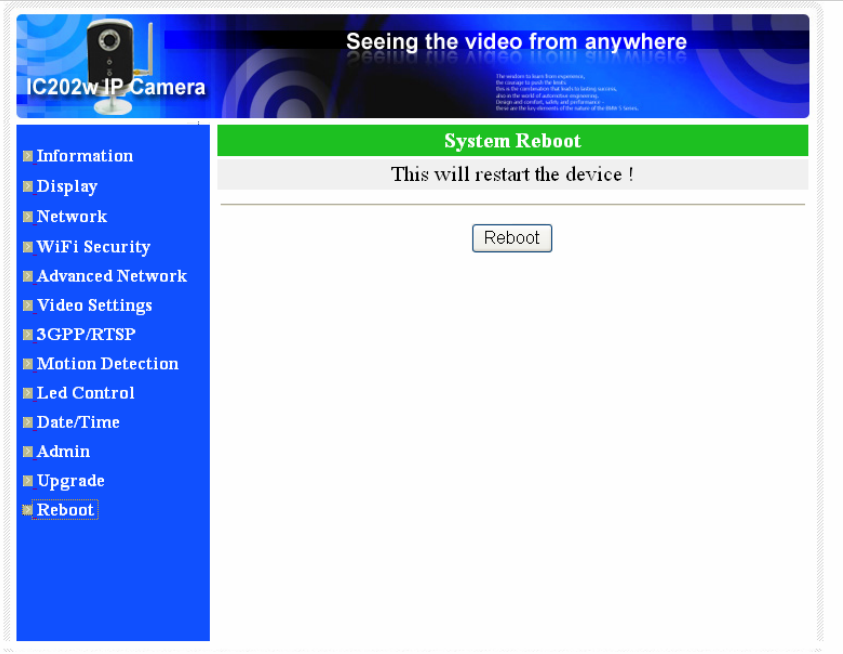

Figure 3-19: System reboot settings page

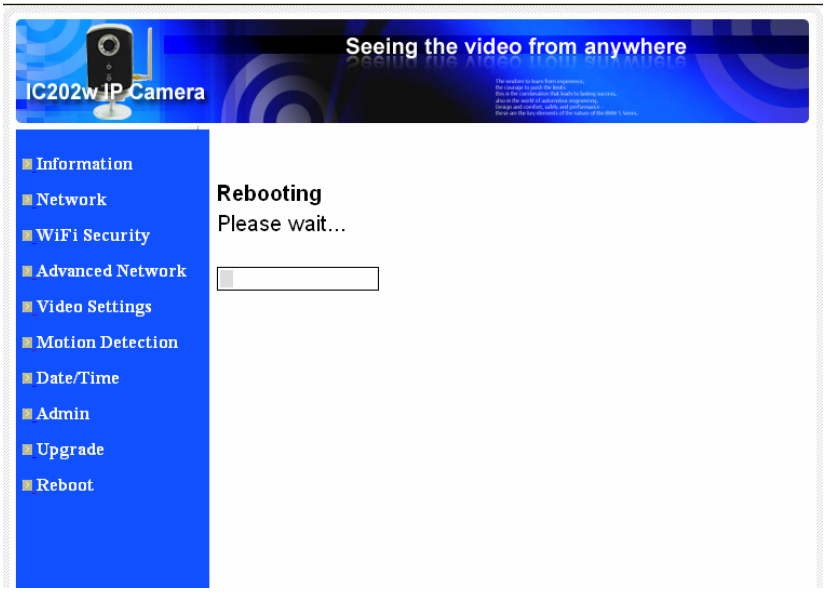

Figure 3-20: System reboot under-going page

3.14. Safe Mode

If by some abnormal operation, for example, powered off during the critical point of the upgrade procedure, the IP CAM will enter into the safe mode. In this mode, you will see the following “Safe mode” page when login into this IP CAM. Please do the upgrade operation immediately to recover the system. On this safe mode, the IP CAM can not display the video on the CamView software, but you can still find this IP CAM on the “Auto search” list.

The steps to recover from “safe mode” are the followings :

1. Use CamView to locate the IP CAM by clicking the “Auto Search” item on the CamView software.
2. Login into the web configuration page of the IP CAM.
3. Upgrade the firmware from the “Upgrade” page.

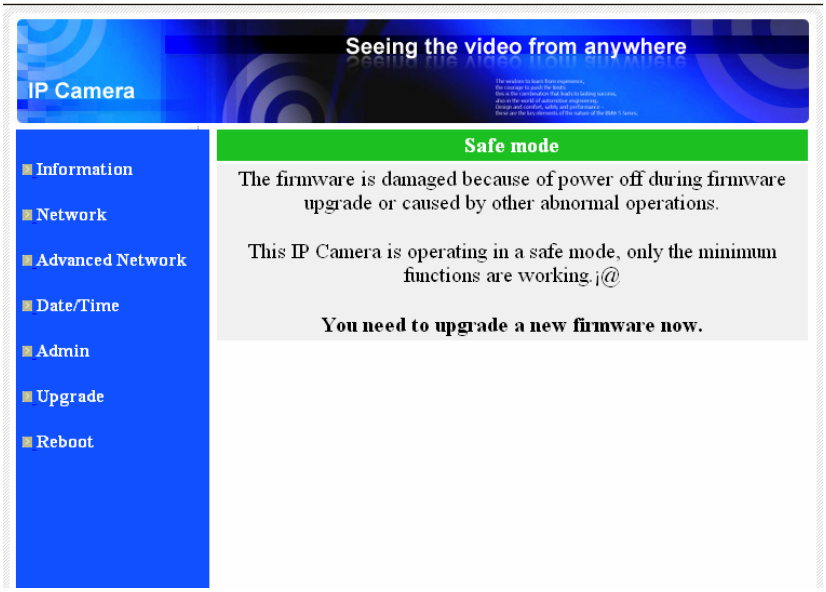
Seeing the video from anywhere
IP Camera
Information
Network
Advanced Network
Date/Time
Admin
Upgrade
Reboot
Safe mode
The firmware is damaged because of power off during firmware upgrade or caused by other abnormal operations.
This IP Camera is operating in a safe mode, only the minimum functions are working.¡@
You need to upgrade a new firmware now.

Figure 3-21: Safe mode information page

3.15. Set to factory default

For some reason, for example you forgot the web login password, you may want to set the IP CAM to the factory default settings. The only thing you need to do is using a stick to press the “reset” button on the back of the IP CAM body for more than **3 seconds** and release it, do this when the IP CAM is powered on. The IP CAM will reset to the factory default settings and restart automatically.

The web login account will be “admin” (no password), the play-video password will be “ipcam” after reset to factory default.

Figure 3-22: Stick on the reset button to set to the factory default

4. Features and specifications

4.1. Features

- Easily access the camera from anywhere in the world via the ID/password
- No complicated NAT/router settings needed.
- Free video management software - CamView program accompanied for easy access and multi-camera management.
- 3GPP/ISMA support.
- Built-in Web server for managing via standard web browser.
- Supports enhanced MPEG-4 compression
- Supports resolution of up to 640x480 pixels, 30 frames per second.
- View video from your Wireless or wired Ethernet network
- 802.11 b/g WiFi security supports WEP and WPA-PSK(TKIP and AES) (for IC202w).
- Supports PPPoE protocol for direct ADSL connection.
- Motion Detection and E-mail/FTP notification, attach jpeg image file.
- Synchronize the time through NTP protocol.
- Connect up to 20 users simultaneously (please see appendix B).
- Built-in microphone for synchronized audio.
- Online Firmware upgrade, will enter safe mode when power is off during critical firmware upgrade point.
- Watchdog function to prevent system failure.

4.2. Specifications

Models	IC202/w
Power	DC 5V, 1A
Processors	RISC CPU, hardware video processing and compression.
Network interface	Ethernet 10BaseT/100BaseTX, Auto-MDIX, RJ-45
Wireless interface	IEEE 802.11g 6 - 54 Mbps IEEE 802.11b 1 - 11 Mbps Transmit power: 14.5dBm typically @ 802.11g 17.5dBm typically @ 802.11b Receiver sensitivity: 54Mbps: Typical -73dBm @ 10% PER 11Mbps: Typical -86dBm @ 10% PER Modes: Infrastructure and ad-hoc Antenna gain: 1.8 dBi
Image sensor	RGB VGA 1/4 inch CMOS Automatic exposure control, automatic white balance, automatic gain control, automatic brightness control.
Light sensitivity	1.9 Lux
Lens	3.2 mm, F2.0, viewing angle: 61°, fixed iris, focus range: 40 cm to infinity
Buttons	One reset button, to factory default settings
Indicators	One LED for internet connection status indication One LED for Ethernet connection indication
Video compression	MPEG-4 Part 2 (ISO/IEC 14496-2) with motion detection, profiles: Simple Profile, level 0-3
Resolutions	160x120, 320x240, 640x480
Frame rate	Up to 30 fps in all resolutions
Video streaming	MPEG-4 Controllable frame rate and bandwidth
Image settings	Resolution: VGA(640x480), QVGA(320x240), QQVGA(160x120) Bandwidth : 64k, 128k, 256k, 512k, 768k, 1M, 1.2M, 1.5M bps Frame rate : 5, 10, 15, 20, 25, 30 fps
Audio	Built-in microphone for audio monitoring Audio compression: MPEG2 audio, AMR-NB for 3GPP/ISMA

CMT IP CAM IC202/w

Security	Web management username/password protection Video display ID/password protection WiFi WEP and WPA security mode
Installation, management and maintenance	Installation tool on CD and Web-based configuration Automatic configuration backup and restore Video management software-CamView for video access and multi-camera management Firmware upgrades via FTP
Minimum Web browsing and management software requirements	Built-in web server for standard web browser access Pentium 4 CPU 1.0 GHz or higher, or equivalent AMD 256 MB RAM
Supported protocols	IPv4, HTTP, TCP, ICMP, RTSP, RTP, UDP, IGMP, RTCP, SMTP, SNTP, FTP, DHCP, UPnP, ARP, DNS, PPPoE, etc.
Accessories (included)	Power adaptor, camera bracket, RJ45 ethernet cable, quick installation guide, CD with installation tool/software and User's Manual, ID/Password card, antenna(for IC202w).
Video management software	Surveillance application for viewing and archiving up to 16 cameras
Users	Up to 20 simultaneous unicast users (please see appendix B) Unlimited users using multicast
Alarm and event management	Events triggered by video motion detection Notification/upload of JPEG images over FTP and/or email
Dimensions (HxWxD) and weight	125 x 75 x 35 mm, 260 g, incl. camera bracket, excl. power adaptor
Approvals	CE, FCC Part 15 Subpart B Class B Wireless RF - CE, FCC Part 15 Subpart C Power supply: FCC, UL EN 60950
Operating conditions	0-50 °C Humidity 20 - 80% RH (non-condensing)

5. Package contents

Figure 5-1: IC202/W body

Figure 5-2: Power Adaptor

Figure 5-3: Bracket

Figure 5-4: Antenna

Figure 5-5: Quick installation guide

Figure 5-6: Ethernet cable

Figure 5-7: Installation CD

Figure 5-8: ID/Password Card

Appendix A. List of Tested NAT/router Devices

The followings are the list of tested NAT/router devices that can work with the IP CAM and CamView software when viewing in a remote location. You do not need to do any modification on the default settings of the NAT/routers. In some office environment, if some strict firewall function is enabled, it's possible that you can not view the IP CAM video through the firewall router. In this situation, please contact your MIS person to solve the problem.

Brand name	**Model name**
Asus	WL-550gE
Belkin	P5D7230-4
Buffalo	WHR-G54S
Buffalo	WHR-HP-G54
Corega	CG-WLBARGO
D-Link	DI-524
LanTech	WL54G-BR
Linksys	WRT54G
Netgear	WNR834B
PCi	BLW-HPMM
SMC	SMCWBR14-G2
ZyXEL	P-334WH

Table A-1: List of tested Wireless AP/router devices

Brand name	**Model name**
AboCom	CAS5047
ASUS	RX3041
Buffalo	BBR-4HG
Corega	CG-BARSD
DLink	DI-604
Edimax	BR-6104K
LanTech	HR-114Pro
Lemel	LM-IS6500
PCi	BRL-04R
ZyXEL	Prestige-334

Table A-2: List of tested Wired NAT/router devices

Appendix B. Maximum Allowed Video Users

The maximum allowed video users for a single IC202/w camera at the same time is dependent on the video settings including “Internet speed” and resolution. The followings are the summary of the maximum allowed video users:

1. **When audio is disabled.**

For video resolution of 160x120 pixels

Frame rate\bandwidth	64k ~ 512k	1M ~ 1.5M
5fps ~ 30 fps	20	4

For video resolution of 320x240 pixels

Frame rate\bandwidth	64k ~ 256k	512k	768k	1M ~ 1.5M
5fps ~ 30 fps	20	18	9	4

For video resolution of 640x480 pixels

Frame rate\bandwidth	512k	768k	1M ~ 1.5M
5fps ~ 30 fps	8	6	4

2. **When audio is enabled.**

For video resolution of 160x120 pixels

Frame rate\bandwidth	64k ~ 256k	512k	1M ~ 1.5M
5fps ~ 30 fps	20	14	4

For video resolution of 320x240 pixels

Frame rate\bandwidth	64k ~ 256k	512k	768k	1M ~ 1.5M
5fps ~ 30 fps	20	12	8	4

For video resolution of 640x480 pixels

Frame rate\bandwidth	512k	768k ~ 1.2M	1.5M
5fps ~ 30 fps	6	4	3

Appendix C. Performance Information

1. Video Performance Information

The video quality is dependent on the video parameter settings and the network quality. If you want to have a better video quality, you will usually set higher resolution and higher frame rate. This is fine when you are viewing the video locally in the same network. But when you want to see the video remotely through the Internet, you need to know the Internet speed (bandwidth) connected to your home network. If the “Internet speed” setting of your IP camera is very large, but your real Internet speed (bandwidth) is relatively low, the video quality could be very bad. In some worst case, the video display could be disconnected. In order to have the best video quality, you better have broadband service from your ISP and set the “Internet speed” of the IP camera a little lower than the real Internet speed provided by your ISP.

Also need to notice that when multiple users are displaying the videos from the same IP camera at the same time, the video bandwidth times number of users will be needed for the Internet speed.

2. WiFi Performance Information

The WiFi performance is dependent on the distance between the IP camera and the AP (Access Point) / router and dependent on the number of devices connected to the AP/router. Also need to consider that if there are any barriers like wall or floor between the IP camera and the AP/router. IF there are some open space between the IP camera and the AP/router, you also need to know that the performance will be interfered in rainy day. The antenna gain and it’s direction in the AP/router will also affect the WiFi performance. In general case, when the IP camera is set to the default video setting (256k bps) and there are no other interferences between the IP camera and the AP/router, the working straight distance is about 100 meters between IP camera and the AP/router.

Appendix D. Trouble shooting

1. What's going on when the red led light on the IP camera is flashing?

A: When the IP Cam is connected to the Internet and working correctly, the red led light will be on constantly. If the red led light is flashing, it's probably because there is some network connecting problem. Please check the network connection again and follow the instructions on the user manual to set it up again.

2. When the IP Cam is connected to the network through wireless connection, the video quality is not good, how could I fix this problem?

A: When the IP Cam is connected using wireless network and the video quality is not good, it's probably because the distance of the IP Cam is too far away from the wireless AP(Access Point) or WiFi router, or there are too many devices connected to the AP, or maybe because the WiFi antenna is not in the best position. Please try to figure out which one is the cause of the problem and you can then fix this problem.

3. Could I adjust the effective focus of the IP Cam?

A: The effective focus of the IP Cam is from 30cm to infinity, so, in almost all circumstances you can see the video clearly. There is no need to adjust the effective focus.

4. What's the viewing angle of the IP Cam?

A: The viewing angle of the IP Cam is about 60 degrees.

5. What's the longest distance using the IP Cam to see the video?

A: When using the IP Cam to see a long-distance object, whether it's clear or not depends on the size of the object. Usually when your eyes can see something clearly in that distance, the IP Cam can also see that object clearly in about the same distance.

6. What should I do if the password is forgotten, and the ID/password card is missing?

A: The easiest way to solve this problem is to reset the IP Cam to the factory default. Please stick on the reset button on the rear panel of the IP Cam for more than 3 seconds and release it. The IP Cam will then restart to the factory default. The default administrator account is "admin", administrator password is empty. The default video-play password is "ipcam". You can adjust these account and passwords by using the browser to login into the IP Cam and do the needed modifications.

7. What should I do if I can not hear the audio sound from the IP Cam?

A: There is a microphone inside the IP Cam. If you can see the video from the accompanied CamView software, but can not hear the audio sound, please check the followings:

(1). Check if the speaker of the computer is turned on, you can try to play a audio file on the computer to verify this.

(2). Check if the microphone on the IP Cam is enabled. Please login into the web configuration page of the IP Cam, select the "video" settings, click the "Enable audio microphone" choice.

8. I can see the video in a remote place, but the video quality is not good and sometimes the video will disconnect and then the video will reconnect again by itself.

A: It's probably because the internet bandwidth (internet speed) is not big enough. Please try to apply for a better internet connection from your Internet Service Provider or decrease the bandwidth settings of the IP Cam. You can adjust the bandwidth requirement of the IP Cam either from the CamView software or login into the web configuration page of the IP Cam to do the modification.

9. Does the IP Cam provide the recording function?

A: You can do the recording of the video/audio of the IP Cam from the CamView software with the CamView software version later than the version number v1.1. Another software CamPlay is needed to play the recorded vide/audio files.

10. The video seems a little dark when the IP Cam is used inside the house, how could I improve this?

A: The sensor used in the IP Cam is the CMOS type. Although the sensitivity of the sensor is already very good compared to other product's CMOS sensor, there is still a limitation. If the video is still too dark for your environment, please try to increase the lightness of the light source. Another model of our IP Cam products IC212w with IR led inside could help on some of the very tough environment. But please be noticed that when the IR led is turned on in the dark room, the video will be black and white only.

11. Why the video display is stopped, and the frame rate shown on the display banner is 30?

A: It's probably because the bandwidth of your internet connection is too small, maybe you need to decrease the bandwidth of the video settings of your IP Camera, and then try again.

12. Can I connect the IP camera directly to my PC/notebook with an Ethernet cable?

A: If the IP camera is directly connected to your PC/notebook computer using an Ethernet cable, the IP camera will automatically use an IP address called "auto IP" with IP address 169.254.xxx.xxx. If your PC/notebook computer is configured to DHCP, it will also use an "auto IP" address. But this will take about one minute after the IP camera is connected to the computer and you need to make sure that the WiFi interface on your PC/notebook computer is disabled. After about one minute, you can run the CamView software to access the IP camera, the CAM ID should be displayed on the "auto-search" list. You can then see the video by double clicking the CAM ID icon. But you need to know that in this situation, other local or remote computer can not see the video.

Appendix E. 3GPP/ISMA operation

3GPP/ISMA is using RTSP protocol for 3G mobile phone to display the video stream from some network devices, including IP camera. The IC202w support the RTSP protocol and video/audio codec needed by 3GPP/ISMA. Users only need to access the address rtsp://ip_cam_address/CAM_ID.password on the 3G mobile phone to access the video of the IP camera. No other extra configuration is needed on the IP camera. Where ip_cam_address is the public IP address of the IP camera. CAM_ID is the unique Camera ID of the specific IP camera. Password is the video play password of the specific IP camera(detailed in section 3.6). Different 3G mobile phone may need different operation to be able to key in the rtsp address, please contact the 3G mobile phone customer service for more details.

The video quality and resolution is the same value as set on the “video settings” page. Since the bandwidth provided by the 3G service is under 256k bps, better to configure the “Internet speed” of the IP camera to 128k or 64k bps.

Notice 1: when the audio microphone is enabled on the IP camera, if the “Internet speed” in “video settings” page is bigger than 256k or the resolution is 640x480, the audio will be disabled for 3GPP/ISMA access. In all other cases, the 3G mobile phone will be able to hear the audio from the IP camera.

Notice 2 : when the audio microphone is enabled on the IP camera, if there is any 3G mobile access to the IP camera(the mobile will hear the audio), in this same time, there will be no audio on the CamView playing window for this IP camera.

For more information about operation on different 3G mobile phones, please contact us for detailed document.

Appendix F. Third party and embedded web page integration

For third party and embedded web page integration, IC202w support the standard RTSP protocol and video/audio codecs needed by most generally used video play software, including Apple QuickTime and VideoLAN. The supported media protocols including TCP and UDP. IC202w will automatically use TCP or UDP media stream depends on the connection request. The video codec supported is MPEG4, the audio codecs supported are AMR-NB and MPEG2-audio.

The access methods are the followings :

rtsp://ip_cam_address/CAM_ID.password.mp2	for MPEG4 video + MPEG2 audio
rtsp://ip_cam_address/CAM_ID.password	for MPEG4 video + AMR-NB audio

Where ip_cam_address is the IP address of the IP camera. CAM_ID is the unique Camera ID of the specific IP camera. Password is the video play password of the specific IP camera(detailed in section 3.6). Users can modify the password of the IP camera to prevent others to see the video.

For embedded web page integration, add the following codes into the proper position of the desired web page :

```
<object classid="clsid:5C519EC4-2BAE-44CE-B7F5-AD0CCD4BEFBD"
id="mpeg4ax"
codebase="http://www.ezipcamera.com/ActiveX/axmpeg4.cab#Version=0,0,0,0"
width="320" height="240">
<param name="Src" value=" rtsp://ip_cam_address/CAM_ID.password.mp2">
</object>
```